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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,672	09/14/2005	Alastair Robert Buckley	BHJ9USA	1913
270	7590	12/12/2007	EXAMINER	
HOWSON AND HOWSON SUITE 210 501 OFFICE CENTER DRIVE FT WASHINGTON, PA 19034			LIN, JAMES	
			ART UNIT	PAPER NUMBER
			1792	
			MAIL DATE	DELIVERY MODE
			12/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,672	Applicant(s) BUCKLEY ET AL.	
	Examiner Jimmy Lin	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 34-57 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,37-39,41,42,47,48,50 and 55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,34-36,40,43-46,49,51-54,56 and 57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa et al. (WO 01/01735, references made are to the English equivalent U.S. Patent No. 6,652,700) in view of Unger et al. (U.S. Patent 6,408,878) and Kashiwabara (U.S. Publication 2002/0072139).

Namikawa discloses a method of making an organic electroluminescent (EL) device (abstract). Protective material 3 of a photo-resist material can be spin coated onto the substrate and patterned with a known technique to gain access to the substrate in well-defined regions. An organic EL medium is formed on entire surface of the substrate. The protective material is then removed (col. 6, lines 14-36).

Namikawa does not explicitly teach that removal of the protective material is done by dissolution in a solvent. However, Namikawa teaches that the protective material can be a photo-resist material (col. 3, lines 33-34). Accordingly, Unger teaches that it is well known to use solvent to remove photo-resist material (col. 10, lines 4-7). It would have been obvious to one of ordinary skill in the art at the time of invention to have removed the protective material of Namikawa via a solvent dissolution process with a reasonable expectation of success because Unger teaches that solvent dissolution is an operable method of removing photo-resist materials. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Namikawa and Unger do not explicitly teach that the solvent is soluble in the protective material while insoluble in the EL material. However, Kashiwabara teaches that the use of a photo-resist solvent that does not dissolve the EL materials is advantageous [0055]. Therefore, it

would have been obvious to one of ordinary skill in the art at the time of invention to have used a solvent that dissolves the protective material of Roitman while the EL material of Roitman is insoluble in said solvent. One would have been motivated to do so in order to have prevented the dissolution of the EL material and degradation of the luminous properties.

Claim 2: Namikawa teaches that the substrate can be made of glass (col. 2, lines 59-61).

Claim 54: Namikawa teaches that the functional material is an organic EL material.

3. Claims 1-2, 34, 51, 54, and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (U.S. Patent No. 5,693,962) in view of Unger '878 and Kashiwabara '139.

Shi teaches a method of making an organic EL device (abstract). A protective material 105 of a photo-resist material can be spin-coated and patterned to gain access to the substrate in well-defined regions. An organic EL material is then deposited over the entire substrate. The protective layer is then removed (col. 4, lines 29-58; Figs. 2-4).

Shi does not explicitly teach that removal of the protective material is done by dissolution in a solvent. However, such is obvious over Unger for substantially the same reasons as discussed immediately above.

Shi and Unger do not explicitly teach that the solvent is soluble in the protective material while insoluble in the EL material. However, such is obvious over Kashiwabara for substantially the same reasons as discussed immediately above.

Claim 2: Shi teaches that the substrate can be made of glass (col. 4, lines 3-5).

Claim 34: Shi teaches that the EL material can include a hole transporting material and an electron transporting material (col. 4, lines 44-48).

Claim 51: Shi teaches that the EL material can be deposited via evaporation (col. 6, lines 47-52).

Claim 54: Shi teaches that the functional material is an EL material.

Claims 56-57: Shi teaches that the deposition method of forming a protective layer and removing the protective layer is repeated to form EL patterns of three different colors (Figs. 2-4).

4. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa '735 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Miyashita et al. (U.S. Publication 2002/0136823).

Roitman, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the substrate comprises a charge injection layer. However, Miyashita teaches a method of making an EL device (abstract), wherein a common charge injection layer 815 can be formed above the electrode 801,802,803 prior to patterning of the EL material 806,807,808 (Fig. 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a charge injection layer on the substrate of Namikawa with a reasonable expectation of success because Miyashita teaches that such an EL structure is operable. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

5. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa '735 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Rasmussen (U.S. Publication 2001/0015318).

Namikawa, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the protective material comprises poly(vinyl alcohol) (PVA). However, Rasmussen teaches that PVA-based photoresists are well-known in the art [0051]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a PVA-based photo-resist as the particular photo-resist of Namikawa with a reasonable expectation of success because Rasmussen teaches that PVA is suitable for use as photo-resist materials. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

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6. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi '962 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Rasmussen '318 for substantially the same reasons as discussed immediately above.

7. Claims 40 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa '735 in view of Unger '878, and Kashiwabara '139 as applied to claim 1 above, and further in view of Friend (WO 99/12398).

Namikawa, Unger, and Kashiwabara are discussed above, but do not explicitly teach that a second protective material is applied subsequent to step (a), is removed in the well-defined regions in step (b), and is subsequently removed.

Namikawa teaches that the protective material is formed using conventional photo-resist masking techniques (col. 3, lines 30-36). Friend teaches that an aluminum layer (i.e., the second protective layer) deposited onto the photo-resist layer can be used as a mask to etch the photo-resist layer (pg. 12, 1st paragraph). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used aluminum as the particular mask of Namikawa with a reasonable expectation of success because Friend teaches that such materials are operable for forming a masking layer for photo-resist materials. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claims 43-44: Friend teaches that the second protective layer can be made of aluminum as discussed above.

Claim 45: Namikawa teaches that the protective layer can be patterned using conventional photo-resist techniques and Friend teaches that the second protective layer (i.e., the aluminum mask) can be patterned via reactive ion etching (pg. 12, 1st paragraph).

8. Claims 40 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi '962 in view of Unger '878, and Kashiwabara '139 as applied to claim 1 above, and further in view of Friend '398 for substantially the same reasons as discussed above.

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9. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa '735 in view of Unger '878, Kashiwabara '139, and Friend '398 as applied to claim 45 above, and further in view of Oswald et al. (U.S. Publication 2002/0011641).

Namikawa, Unger, Kashiwabara, and Friend are discussed above, but do not explicitly teach that the second protective layer made of aluminum can be patterned via laser ablation. However, Oswald teaches that patterning aluminum films by ablation with a laser is a well-known technique [0049]-[0050]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used laser ablation as the particular method of patterning the aluminum protective layer of Friend with a reasonable expectation of success because Oswald teaches that such methods are operable for patterning aluminum layers. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

10. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi '962 in view of Unger '878, Kashiwabara '139, and Friend '398 as applied to claim 45 above, and further in view of Oswald '641 for substantially the same reasons as discussed above.

11. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa '735 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Kim et al. (U.S. Patent 6,146,715).

Namikawa, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the protective material is removed from the well-defined regions via laser ablation. However, Kim teaches a method of making an EL device, wherein portions of the substrate are exposed via exposure to a laser beam (col. 5, lines 12-16; Figs. 7A-8K). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a laser etching method as the particular method to form the well-defined regions of Namikawa with a reasonable expectation of success because Kim teaches that such techniques are operable for exposing portions of an EL substrate. The selection of something based on its known suitability for its

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intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

12. Claims 49, 52-53, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi '962 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Kim '715.

Shi, Unger, and Kashiwabara are discussed above, but do not explicitly teach that an additional layer of protective material is applied over the functional material in step (c) and that the additional layer is removed in step (d). Rather, Shi teaches that the protective layer is removed each time prior to the formation of the next color of EL material.

Kim teaches a method of making an EL device (abstract). Referring to Figs. 8A-8I, a protective layer 104 is first deposited onto the substrate, a well-defined region is exposed for a first color, and the EL material 105a for that color is deposited into the well-defined region. The process is repeated again for the EL material 105b of a different color. In this manner, additional protective layers are formed without removal of the previously-applied protective layer, and additional well-defined regions are formed for a color after each additional protective layer is formed. The method of Kim is similar to the method of Shi in that both processes use protective layers to prevent the deposition of one EL color onto another. One of ordinary skill in the art would have recognized that the formation of additional protective layers as taught in Kim, when used in the method of Shi, would have required only a single removal step of the protective layers. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used the method of forming protective layers and exposing well-defined regions as taught by Kim in the method of making an EL device of Shi and to have removed all the protective layers in a single step. One would have been motivated to do so in order to have reduced the number of process steps and increase productivity.

Claim 53: Shi and Kim do not explicitly teach that the additional protective layer comprises the same protective material. However, using the same material as an additional layer for the same purpose is an obvious modification. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used the same protective material for

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forming the additional layer. One would have been motivated to do so in order to have reduced the number of different materials used.

Claim 49 is rejected for substantially the same reasons as discussed immediately above.

13. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Namikawa '735 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Himeshima et al. (U.S. Publication No. 2001/0004469).

Namikawa, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the organic EL material is deposited by a method selected from spin coating, evaporation, and sputtering. However, Namikawa does teach that the organic EL material is deposited over the entire substrate (col. 6, lines 17-20). Accordingly, Himeshima teaches that vapor deposition (i.e., evaporation) is a suitable method for depositing a material over an entire substrate [0118]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used vapor deposition as the particular method of Namikawa to form the organic EL layer with a reasonable expectation of success because Himeshima teaches that such is an operable method in the art. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Response to Arguments

14. Applicant's arguments filed 10/8/2007 have been fully considered but they are not persuasive.

Applicant argues on pg. 10 that Roitman teaches away from depositing a functional material as a conformal thin film. However, Namikawa and Shi both teach the formation of a conformal film over an entire substrate having well-defined regions. The grounds of rejection have been modified to include the teachings of Namikawa and Shi in order to account for the claim amendments.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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